

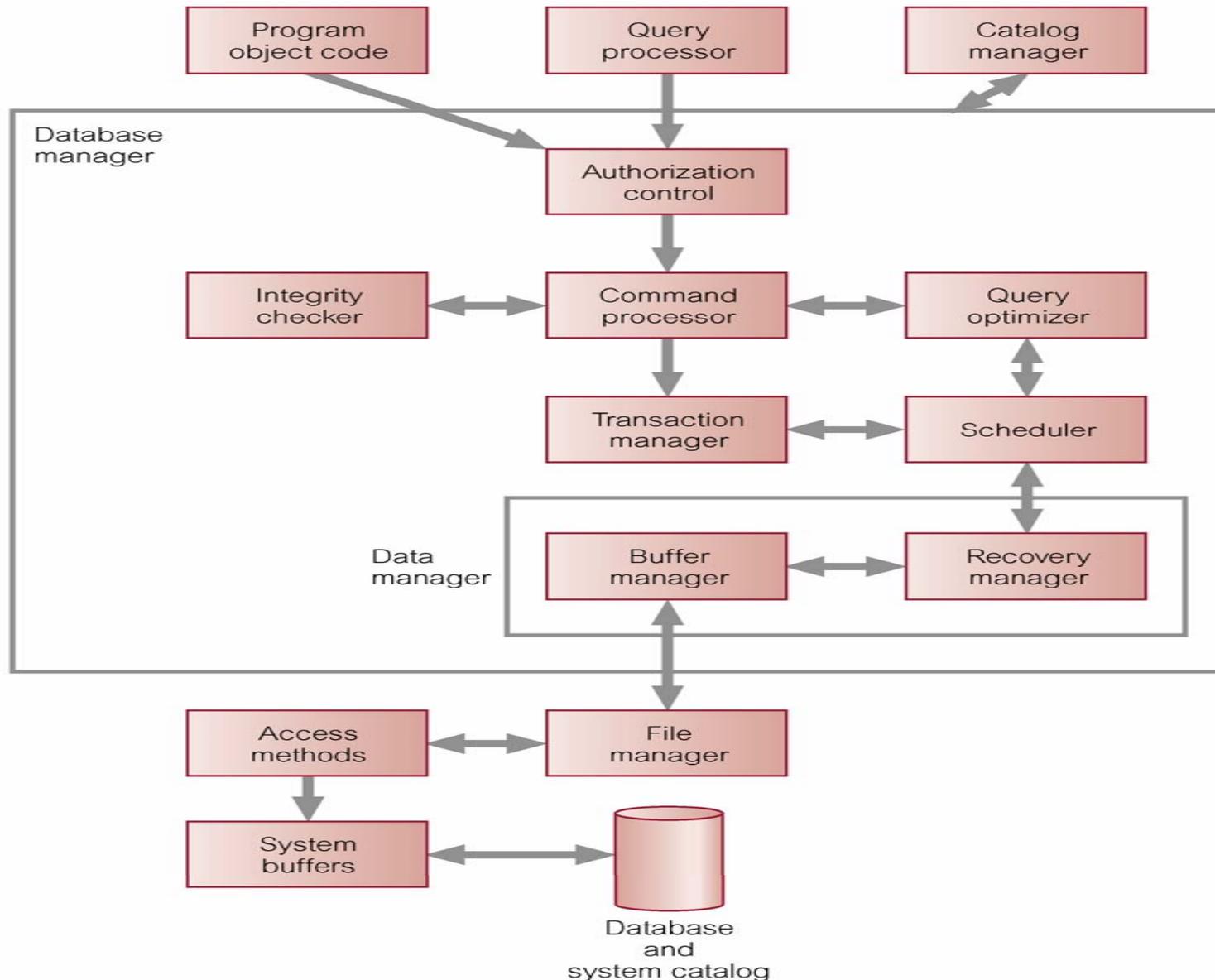
Users of a Database System

Duration: 2 hours

Functions of a DBMS

- **Data Storage, Retrieval, and Update.**
- **A User-Accessible Catalog.**
- **Transaction Support.**
- **Concurrency Control Services.**
- **Recovery Services.**
- **Authorization Services.**
- **Integrity Services.**
- **Utility Services.**

Components of Database Manager (DM)



Components of DB Manager

- **Catalog Manager:** The catalog manager manages access to and maintain the system catalog.

System Catalog

- **Repository of information (metadata) describing the data in the database.**
- **Typically stores:**
 - **Names of authorized users;**
 - **Names, types, and sizes of data items in the database;**
 - **Names of relationships**
 - **Constraints on each data item;**

System Catalog

- **data items accessible by a user and the type of access allowed (e.g. insert, delete, update or read access).**
- **External, conceptual and internal schemas and the mappings between the schemas.**
- Used by modules such as Authorization Control and Integrity Checker.

System Catalog - Advantages

- Maintains control over the data as a resource.
- Helps other users understand the purpose of the data.
- Communication is simplified.
- Identifies the user/s who own or access the data.
- Security can be enforced.
- Integrity can be ensured

Components of DB Manager

- **Authorization Control**
This module checks that the user has the necessary authorization to carry out the required operation.
- **Integrity Checker**
For an operation that changes the database, the integrity checker checks that the requested operation satisfies all necessary integrity constraints.

Components of DB Manager

- **Scheduler** – Responsible for ensuring that concurrent operations on the database proceed without conflicting with one another. It controls the relative order in which the transaction operations are executed .
- **Recovery Manager** – Ensures that the database remains in a consistent state in the presence of failure.